Write your name here

Surname maths made easy | Other names

Pearson Edexcel International GCSE

Centre Number | Candidate Number

Mathematics A

Level 1/2
Paper 1F

Foundation Tier

Sample assessment material for first teaching September 2016

Time: 2 hours

Paper Reference **4MA1/1F**

You must have:
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – there may be more space than you need.
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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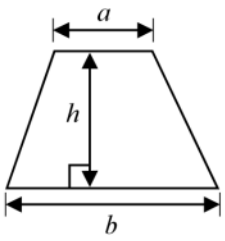
S 5 1 8 3 0 A 0 1 2 0

PEARSON

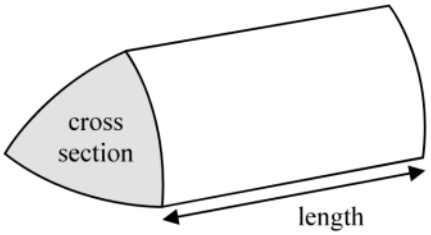
International GCSE Mathematics

Formulae sheet – Foundation Tier

Area of trapezium = $\frac{1}{2}(a + b)h$

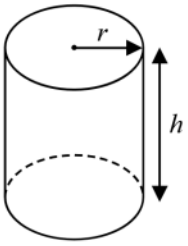


Volume of prism = area of cross section × length



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$



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Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Here is a list of numbers.

2 8 15 24 31 36 40 64

From this list, write down

(a) an odd number

15, 31

15

(1)

(b) a multiple of 6

24 or 36

24

(1)

(c) a square number

36 or 64

36

(1)

(d) a prime number

2 or 31

2

(1)

(Total for Question 1 is 4 marks)

2 (a) Write 64% as a fraction.

Give your fraction in its simplest form.

$64\% = \frac{64}{100} = \frac{32}{50} = \frac{16}{25}$

$\frac{16}{25}$

(2)

(b) Write 9% as a decimal.

$9\% = \frac{9}{100} = 0.09$

0·09

(1)

(c) Work out $\frac{1}{6}$ of 84 kg.

$\frac{1}{6} \times 84 = \frac{84}{6} = 84 \div 6$

14 kg

(1)

(Total for Question 2 is 4 marks)

3 The pictogram shows some information about the number of calculators sold in a shop on each of five days.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

most

(a) On which day did the shop sell the greatest number of calculators?

Thursday

(1)

The shop sold 24 calculators on Wednesday.

(b) Find the number of calculators sold on Thursday.

$\frac{24}{12} = 2$ per box ← no of boxes

Thurs : 20 boxes × 2 = 40

(2)

(c) Find the ratio of the number of calculators sold on Tuesday to the number of calculators sold on Friday.

Give your ratio in its simplest form.

8 : 13

or

$1 : \frac{13}{8}$

8 : 13

(2)

(Total for Question 3 is 5 marks)

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4 Here are the first five terms of a number sequence.

2 (+4) 6 (+4) 10 (+4) 14 (+4) 18

(a) Write down the next two terms of the sequence.

18 + 4 = 22 , 22 + 4 = 26

22 , 26

(1)

(b) Explain how you worked out your answer.

Sequence adds 4 each time

(1)

(c) Find the 11th term of the sequence.

7th = 26

4 terms

11th = 26 + (4 × 4) = 42

42

(1)

(d) Explain why 95 cannot be a term of the sequence.

No numbers in the sequence are odd and even + even = even

(1)

(Total for Question 4 is 4 marks)

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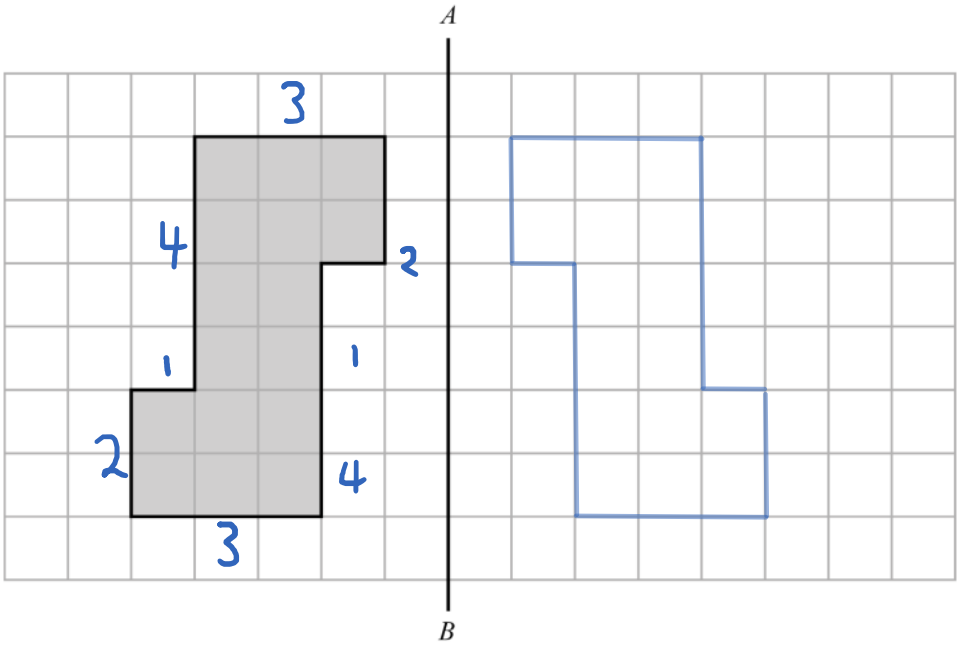
5 The diagram shows a shaded shape drawn on a centimetre grid and a line AB.



(a) Write down the order of rotational symmetry of the shape.

2

(1)

(b) Work out the perimeter of the shape.

$2+1+4+3+2+1+4+3=20$

20 cm

(1)

(c) Work out the area of the shape.

Count squares.

12 cm^2

(1)

(d) Reflect the shape in the line AB.

(2)

(Total for Question 5 is 5 marks)

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6 Rhianna has £25 to spend on plants.
Each plant costs £3.95
She buys as many plants as she can.

How much change should Rhianna receive from £25?

£25·00 ÷ £3·95 ≈ 6·32...

She buys 6 so:

£25·00 − (6 × £3·95) = £1·30

£ 1·30

(Total for Question 6 is 3 marks)

7 (a) Simplify $8c + 7m - 5c + 2m$

8c +7m -5c +2m

3c + 9m

3c + 9m

(2)

(b) Solve $5x - 9 = 4$

5x − 9 = 4

5x = 4 + 9 (+9)

5x = 13

x = 13/5 (÷5)

$x =$ 13/5

(2)

(Total for Question 7 is 4 marks)

8 This rule can be used to work out the shortest distance from the screen a viewer should sit to watch TV.

Multiply the width of the screen by 3

Greg is going to watch his TV.
The width of the screen is 65 cm.

(a) Work out the shortest distance from the screen he should sit.

$65 \times 3 = 195\text{cm}$

195 cm

(1)

Rashida is going to watch her TV.
The shortest distance from the screen she should sit is 249 cm.

(b) Work out the width of the screen.

$249 \div 3 = 83$

83 cm

(2)

The width of a TV screen is w cm.
The shortest distance from the screen a viewer should sit to watch this TV is d cm.

(c) Write down a formula for d in terms of w.

distance = 3 × width

$d = 3w$

$d = 3w$

(2)

(Total for Question 8 is 5 marks)

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9 *ABC* is an isosceles triangle.

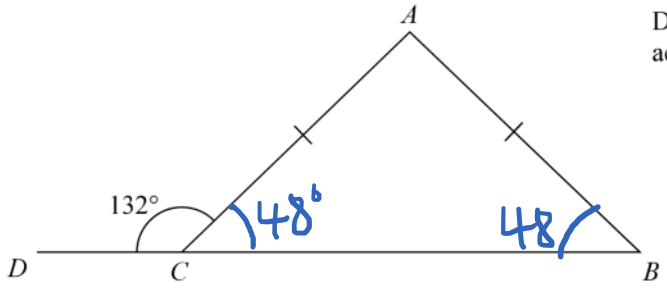

Diagram **NOT** accurately drawn

DCB is a straight line.
AC = *AB*.
Angle *DCA* = 132°

Work out the size of angle *CAB*.
Give a reason for each stage in your working.

180 - 132 = 48 (Angle on a straight line)

∠CAB = 48 (isosceles Δ)

180 − (2 × 48) = 84° (Angles in Δ)

84 °

(Total for Question 9 is 5 marks)

10

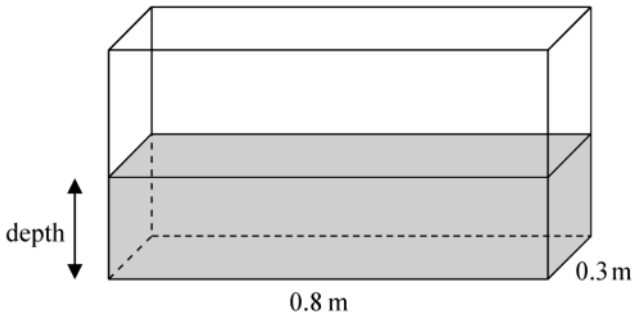

Diagram **NOT** accurately drawn

A fish tank is in the shape of a cuboid.
The length of the fish tank is 0.8 m and the width is 0.3 m.
The volume of water in the fish tank is 108 litres.

$1\ m^3 = 1000$ litres.

Work out the depth of the water in the fish tank.

Volume = L x w x d

$d = \frac{108}{1000} \div (0.8 \times 0.3)$

in m^3 → $\frac{108}{1000} = 0.8 \times 0.3 \times d$

= 0.45 m

(Total for Question 10 is 3 marks)

11 (a) Work out the value of $\frac{51.7 \times 2.8}{9 + \sqrt{3}}$

Write down all the figures on your calculator display.

$\frac{144.76}{10.73}$

13.488556 ..... (2)

(b) Give your answer to part (a) correct to 3 significant figures.

13.48 → round up. 13.5 ..... (1)

(Total for Question 11 is 3 marks)

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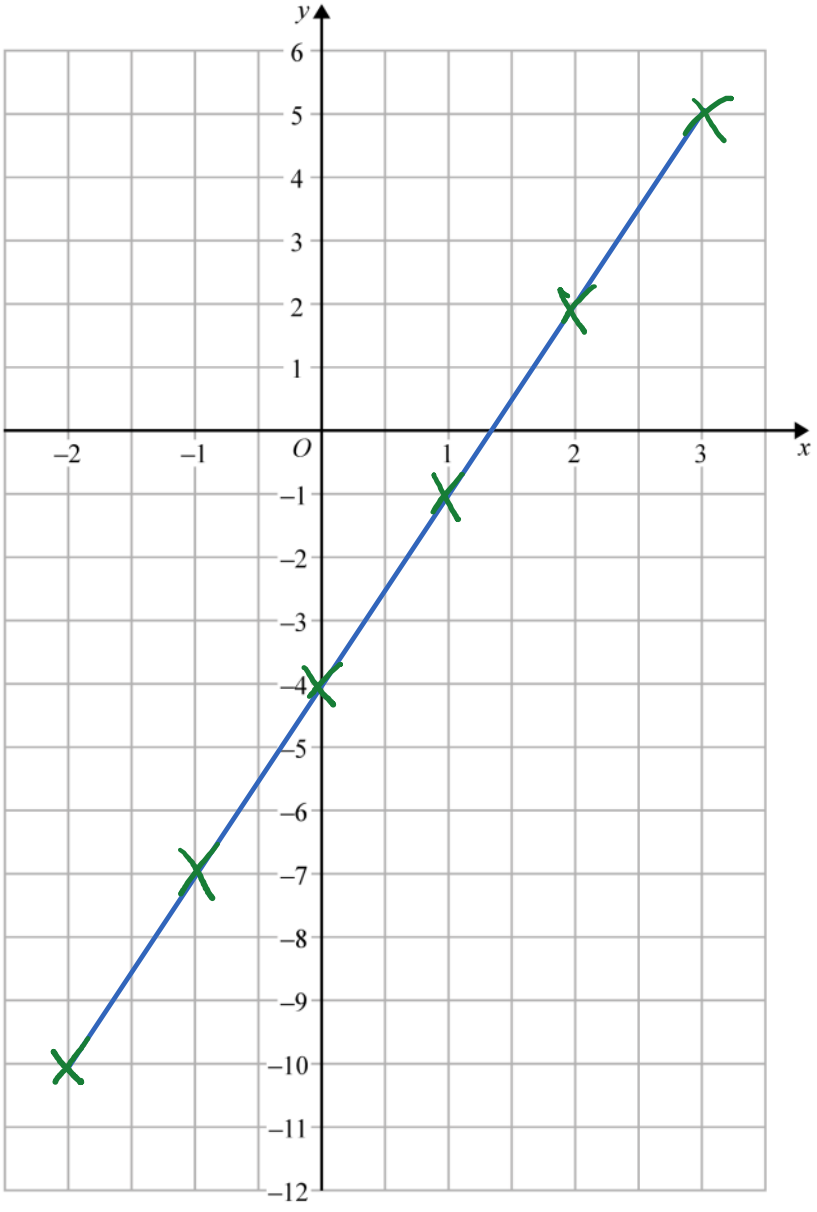
12 On the grid, draw the graph of $y = 3x - 4$ for values of x from -2 to 3

x	y
-2	-10
-1	-7
0	-4
1	-1
2	2
3	5



(Total for Question 12 is 4 marks)

13 A box contains four different kinds of sweets.
Debbie takes at random a sweet from the box.
The table shows the probabilities that Debbie takes an orange sweet or a cola sweet or a lemon sweet.

Sweet	Probability
orange	0.15
cola	0.40
lemon	0.35
strawberry	

(a) Work out the probability that Debbie takes a strawberry sweet.

$1-(0.15+0.4+0.35)$

$1-0.9$

0.1

(2)

There are 40 sweets in the box.

(b) How many of the sweets in the box are lemon?

$0.35 \times 40 = 14$

14

(2)

(Total for Question 13 is 4 marks)

14 (a) Expand $5(2g+7)$

$10g+35$

$10g+35$

(1)

x is an integer.

(b) Write down all the values of x that satisfy $-3 < x \leqslant 2$

~~-3~~, $-2, -1, 0, 1, 2$, ~~3~~

$-2, -1, 0, 1, 2$

(2)

(Total for Question 14 is 3 marks)

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15 Anil lives in England.
He does a search on the internet and sees the same type of camera on sale in Spain and in America.

In Spain, the camera costs 149 euros.
In America, the camera costs $164.78

Anil finds out these exchange rates.

Exchange rates
1 euro = £0.76
£1 = $1.54

How much cheaper is the camera in America than in Spain?
Give your answer in pounds (£).

$164·78 ÷ 1·54 = £107

€149 x 0·76 = £113·24

113·24 - 107 = £6·24

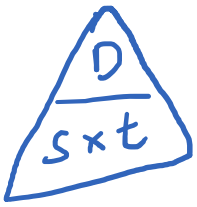
£ 6.24

(Total for Question 15 is 4 marks)

16 Yoko flew on a plane from Tokyo to Sydney.
The plane flew a distance of 7800 km.
The flight time was 9 hours 45 minutes.

Work out the average speed of the plane in kilometres per hour.

9 hrs 45 min = 9·75 hours



$S = \frac{D}{t} = \frac{7800}{9{\cdot}75} = 800$

800 km/h

(Total for Question 16 is 3 marks)

17 Penny, Amjit and James share some money in the ratio 3 : 6 : 4
Amjit gets $28 more than James.

Work out the amount of money that Penny gets.

$28 ÷ (6 − 4) = $28 ÷ 2 = $14

$14 × 3 = $42

$ 42

(Total for Question 17 is 3 marks)

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18 A factory has 60 workers.

The table shows information about the distances, in km, the workers travel to the factory each day.

midpoint	Distance (d km)	Frequency	$f \times m$
2.5	$0 < d \leqslant 5$	12	30
7.5	$5 < d \leqslant 10$	6	45
12.5	$10 < d \leqslant 15$	4	50
17.5	$15 < d \leqslant 20$	6	105
22.5	$20 < d \leqslant 25$	14	315
27.5	$25 < d \leqslant 30$	18	495
			1040

(a) Write down the modal class.

↳ mode = most often

$25 < d \leqslant 30$

(1)

(b) Work out an estimate for the mean distance travelled to the factory each day.

Find midpoint × frequency.

$1040 \div 60 = 17.3\dot{}$

17.3 km

(4)

One of these workers is chosen at random.

(c) Write down the probability that this worker travels more than 20 km to the factory each day.

no > 20 → 14 + 18 = 32

Total → 60

$\frac{32}{60}$

(2)

(Total for Question 18 is 7 marks)

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19 Nigel bought 12 boxes of melons.
He paid \$15 for each box.
There were 12 melons in each box.

Nigel sold $\frac{3}{4}$ of the melons for \$1.60 each.

He sold all the other melons at a reduced price.

He made an overall profit of 15%

Work out how much Nigel sold each reduced price melon for.

$12 \times 12 = 144$ melons

$12 \times 15 = \$180$ cost

$144 \times \frac{3}{4} \times \$1.60 = \$172.80$ (from boxes at \$1.60)

$180 \times 1.15 = \$207$ (total revenue)

$$\frac{207 - 172.80}{36} = \$0.95$$

leftover melons

\$ 0.95

(Total for Question 19 is 5 marks)

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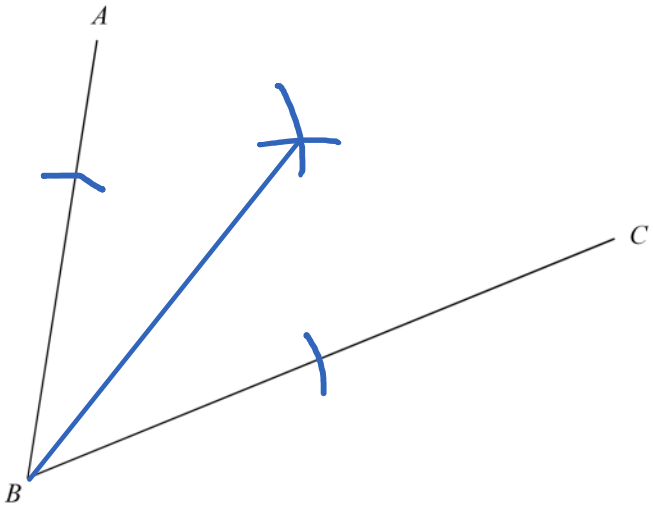
20 Use ruler and compasses to construct the bisector of angle ABC.
You must show all your construction lines.



(Total for Question 20 is 2 marks)

21 (a) Factorise fully $18e^3f + 45e^2f^4$

Factors: $9, e^2, f$.

$9e^2f(2e + 5f^3)$

$9e^2f(2e+5f^3)$

(2)

(b) Solve $x^2 - 4x - 12 = 0$
Show clear algebraic working.

Factors of 12: 1, 12 2, 6 3, 4

Add to get 4:

$(x - 6)(x + 2) = 0$

$x = 6$ or -2

(3)

(Total for Question 21 is 5 marks)

22

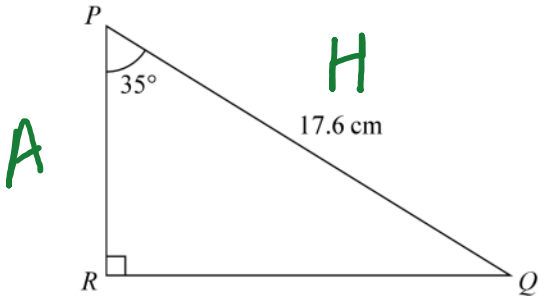


Diagram **NOT** accurately drawn

Calculate the length of PR.
Give your answer correct to 3 significant figures.

$\cos x = \frac{A}{H}$: $\cos 35 = \frac{PR}{17.6}$

$PR = 17.6 \cos 35 = 14.4$

14.4 cm

(Total for Question 22 is 3 marks)

23 In a sale, all normal prices are reduced by 15%
The normal price of a mixer is reduced by 22.50 dollars.

Work out the normal price of the mixer.

22.50 = 15% ÷15
1.5 = 1% ÷15
150 = 100% ×100
×100

150 dollars

(Total for Question 23 is 3 marks)

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24 The table shows the diameters, in kilometres, of five planets.

Planet	Diameter (km)
Venus	1.2×10^4
Jupiter	1.4×10^5
Neptune	5.0×10^4
Mars	6.8×10^3
Saturn	1.2×10^5

(a) Write 1.4×10^5 as an ordinary number.

$1{\cdot}4 \times 100\,000 = 140\,000$

140 000

(1)

(b) Which of these planets has the smallest diameter?

$6{\cdot}8 \times 10^3$

Mars

(1)

(c) Calculate the difference, in kilometres, between the diameter of Saturn and the diameter of Neptune.
Give your answer in standard form.

$1{\cdot}2 \times 10^5 - 5 \times 10^4$

$12 \times 10^4 - 5 \times 10^4 = 7 \times 10^4$

7×10^4 km

(2)

(Total for Question 24 is 4 marks)

25

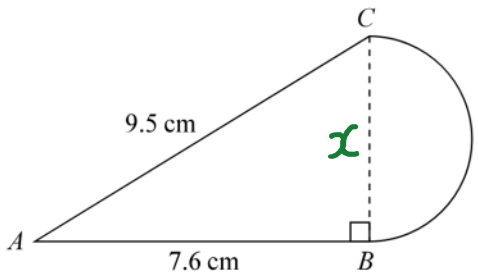

Diagram **NOT** accurately drawn

The diagram shows a shape made from triangle ABC and a semicircle with diameter BC.
Triangle ABC is right-angled at B.

$AB = 7.6$ cm and $AC = 9.5$ cm.

Calculate the area of the shape.
Give your answer correct to 3 significant figures.

Pythagoras: $x^2 + 7.6^2 = 9.5^2$

$x = \sqrt{9.5^2 - 7.6^2}$

$x = 5.7$

Area of Δ: $\frac{1}{2} \times 7.6 \times 5.7 = 21.67$

Area of D: $\frac{1}{2}\pi r^2 = \frac{1}{2}\pi \left(\frac{5.7}{2}\right)^2 = 12.76$

$+ 21.67$

34.43

(3sf) 34.4 cm^2

(Total for Question 25 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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